

SNAP, CRACKLE AND PUMP

YAMAHA WR500ZB

First test on the sizzling, do-it-all rager.

Yamaha's new WR500ZB has got the look. It's mean, racey and hard edged, with a Star Wars elegance that approaches workslike. With the addition of this big boy, Yamaha's off-road lineup is now complete. And like any Open-class machine, Yamaha's new entry into the big-gun, do-it-all market is not targeted at the meek. While the engine remains the same basic five-speed, air-cooled 490cc version that we've been seeing since the early 1980s, the chassis now has similar geometry to the YZ250 as well as



Yamaha fit our test bike with their YZ-R accessory spark arrester and hand guards to make the machine EPA-legal and better equipped to handle the tight stuff.

sharing the same disc brakes and swingarm. In addition, the machine is equipped with even better suspension than the latest WR250.

Yamaha's goal was to offer a simply designed Open-class bike for public consumption that is free of radiators, fun to ride, powerful, easy to maintain, handles like a works bike and offers the advantage of a proven, refined engine design. It was designed to be a desert racer,

76 DIRT RIDER/MAY 1991

hare scrambles weapon and motocross tool. In some ways the factory accomplished its goals rather handily, while in others the new Yamaha WR500ZB is pretty much the same old air hammer with a new pair of shoes.

GOIN' DANCIN'

The really good news is that Yamaha fit the WR500 with truly excellent suspension. We're talking about

When you have to manhandle the big WR in the corners, the tank feels too bulbous. On any section (especially uphill), where you're forced to slow down, maneuver and regain your momentum, the Yamaha is tough to work with. The power is a bit gurgly; it shifts very hard and refuses to be over-revved and coaxed into gear.

a major improvement over both the WR250 and YZ250's KYB fork. Since the WR500's production schedule was later, Yamaha had more time to test new combinations, opting to can the '91 YZ/WR fork (which has both compression and rebound adjusters on top) in favor of a simplified design that mimics the Kawasaki KX's front hardware. The WR has an air bleed and rebound damping adjustment located up top and compression on the bottom. The valving stack and spring rates are aimed at plushness, yet offer enough leeway to let you add compression and stiffen up the front end enough to perform well on a motocross course. For off-road use, we set the front compression clicker at 10 out, and it offered a smooth ride that didn't deflect or offer

Yamaha created their WR500 to be an Open-class, do-it-all weapon. Good KYB suspension, a radically improved chassis and the 490cc air-cooled power plant make the package. DR's own Tom Webb tossed the WR around during desert testing.

PHOTO: KAREL KRAVER



The WR's boost bottle is still hidden under the air shroud that directs a cool air flow to the finned cylinder. The tank looks great, but it's wide at the front and takes some getting used to.

harsh spots in rocky terrain.

The shock system is uniquely Yamaha. A KYB damper mounts to the lowest hanging linkage on the market. Yamaha recommends setting the rider sag at 97mm (naturally that's with the pilot mounted, geared up and positioned in the cornering stance). With test pilot Tim Telford (165 pounds), this meant cranking in the spring considerably so that the WR had absolutely no free sag (sag obtained by pushing down on the unmounted bike's rear end and letting it return). Normally, we like the bike to have at least 5mm of free sag and prefer 10mm. In the sag-free state the WR's rear end reacted too fast to off-road input and responded by kicking, hopping or slapping violently on smaller high-speed impacts. Put simply: it didn't like to follow the terrain. We backed off the rear spring until we got a little bike sag, and this resulted in an immediate improvement.



We shelved the stock handlebar and fit Answer's tallest Alumilite bar onto the machine. This modification helped dramatically when shifting from sitting to standing.



For the 160- to 170-pound rider, the WR's suspension is wonderful. Former National star John Hatley loved the machine and could take it over the monster jump without fear. He claimed that it soaked up landings better than his YZ250.

The WR500 works well in a variety of off-road conditions. Both suspension ends feel progressive and respond well to gnarly G-loads and jumps, without sending tingling aftershocks back to the rider in rocky terrain. No worries here, it's the best Yamaha suspension we've used in years. What is grim is the amount of effort needed to ride the WR hard, especially when the terrain gets tight, nasty or sandy. The bike feels big and heavy, and it will get your arms burning and send your lungs into full expansion mode when you hammer through a first- or second-gear sand wash.

LOW-SPEED TURMOIL

Several glitches reared their ugly heads at this time. First is the weight (on the *Dirt Rider* scale the WR500 hit 246 pounds, free of fuel!), which feels high and makes for a machine that doesn't mind high-speed maneuvers but resists chopping the throttle and nosing the front end in between a patch of rocks in a 10-mph canyon. The WR500 likes speed (which effectively reduces the weighty feel), but when ridden through tight enduro terrain it must be piloted aggressively. You've got to be hard on the throttle and clutch, use your body to fight off the WR's top-heavy feel and use the engine response to correct any drop in attitude. It's a lot of work and hard on the pilot.

The bike is also overgeared for tight terrain. First gear is acceptable for saves and starts, but second gear is really tall and spaced too far from first. The initial engine



The standard ED-11 front Bridgestone tire is superb. We added a YZ-R/Acerbis disc protector to ward off rotor abuse.



PHOTO: MARK WEBER

The WR shines in high-speed desert applications. It's got an effective motor from midrange-to-top rpm, smooth suspension and it feels less heavy at speed.

response is a little boggy and doesn't cater to large doses of throttle unless you have a smooth clutch hand to feed in some soothing manageability. We fixed this problem by installing a one-tooth-larger rear SideWinder sprocket. An increase of one tooth on a 500 sounds insignificant, but it rendered second gear usable in most nasty situations.

Once you have a little momentum going, the WR starts to be fun. Big hill climbs get smoked when you're working the upper limits of second and third gear, and any whooped-out straights are eaten alive. In the California desert, the

WR500 is a natural simply because the speeds are fairly high, the suspension likes abuse and the bike won't leave you caught in the dreaded first- and second-gear dead zone with the stock gearing. There isn't an Open-class bike made that has a more usable midrange rip, and the WR's upper pull is nothing short of amazing. In its element, the Yamaha is unbeatable in the motor department.

Jetting is critical on this beast. We ran a 420 main and a 4.0 slide with the needle clip positioned two slots from the top. This setup worked well for 3000-foot elevation

and lots of tight enduro work sprinkled with the occasional big hill climb and high-speed straight.

Shifting is another concern with the WR. It's not great. In fact, it's barely average, requiring a heavy toe to nudge it from cog to cog. The bike refuses to be overrevved. Shift soon, shift quick and you'll be happy.

FIT AND FEEL

The WR500's ergos are a bit strange. It sits nice and low, the new gas tank starts off skinny and unfolds into an old-KTM-like leg-spreader, the footpegs are well placed, albeit mounted high on the frame, and the handlebar is very low. This means that if you're 5-foot-9 the bike feels wonderful, but if you're any larger, the handlebar will feel fine when you're sitting but like two pencils mounted to the triple clamps while you're up and scanning the horizon. We immediately slipped on a pair of taller Answer Alumilites to quiet the sniveling. Since the tank holds just under 3.5 gallons the bike's range is fine for long loops.

The large fuel cell isn't bothersome unless you're sitting on the gas cap negotiating some awkward corner, and the rest of the controls are well placed and comfy. We felt that the clutch pull was too stiff, although the spring in the round slide 38mm Mikuni offered little resistance. The front brake is adjustable, progressive and strong. Yamaha engineered two handholds inside the rear fender which are excellent for manhandling the machine onto a stand. The rear brake is also strong, not too sensitive, and the pedal height is perfect.



Good marks for the sidestand: it works well. The stock Bridgestone ED-12 rear worked okay, but we installed an M58 which handles intermediate to sandy conditions better. We chose a one-tooth-larger SideWinder rear sprocket that closed up a nasty gap between first and second gear. YPAD's YZ-R chain guide strengthener is a must!

DETAILS

The bike has good zerck fittings in the rear linkage, and a quick jab with the grease gun frees up any stickiness in seconds. Also, there's an excellent O-ring chain mounted up to the steel sprockets. We removed the rear steel unit since we have very little mud in California and replaced it with an aluminum SideWinder grooved sprocket in an attempt to shave some girth and dial in the vast spread between first and second gear. We lost some top end and a little weight, but it was worth it.

A sano steel kickstand bolts directly to the swingarm and works perfectly. Again, it's a heavy item and it does add some tonnage to the package. Still, it performs well, folds up cleanly and doesn't hop when you get in whoops. The swingarm is one of those tapered, factory-looking affairs, complete with snail cam adjusters for the chain and a sealed, rounded end for the arm itself. It's odd looking but trick.

Our bike came with plastic hand guards, a bolt-on spark arrestor and a chain guide strengthener, all courtesy of the aftermarket people from Yamaha. Acerbis builds the hand guards, Answer supplies the spark



Tim Telford airs out the WR over a nasty rock pile. This is where the bike excels. The suspension is progressive and soft enough to sponge up the blows without letting the bike deflect. High-mounted footpegs and a low seat are comfy for the average-sized pilot but too compact for anyone over six feet.

stopper and DeVol packs the steroids for the chain guide—they're all excellent.

The stock rear tire, an ED-12 made by Bridgestone, works pretty well on hardpack and semiloamy dirt, but it's only average in sand and mud. We popped on a Bridgeway M58 intermediate tire and felt an immediate improvement in the

OPINIONS

I spent time on the WR500 in both the desert and on a motocross course in the Pro class. In the desert the bike worked great; it has the best stability of any bike I've ridden. The brakes and ergos are good, and though the tank is wide I can work with it. I also found the bike easy to service and set up.

The WR has a lot of potential as a motocrosser, too. It was as fast as other 500s, although the snappier 250s got out of the turns quicker. You have to take your time in tight turns, since the WR takes a lot of effort to maneuver and it doesn't want to square them off. I didn't notice any trouble in faster turns or on the straightaways, and the bike flat-tracks okay.

For an amateur rider, the Yamaha is probably a pretty good choice as a motocrosser and a great choice as an all-around machine. A pro will find the suspension too soft for moto and will feel that the reluctance to shift under power is a drawback. Otherwise, the WR is impressive in its versatility. You really can ride it

anywhere at any level, and it's very easy to start for a 500.

—Tim Telford

HL/WL: 6'5"/165 lb.
Motorcycle(s) currently raced/ridden:
KTM 250/500 MX
Riding ability: Pro motocrosser

This is the bike that I've wanted Yamaha to make since 1989. I've always felt that the biggest problems with Yamaha's 490 had little or nothing to do with the fact the motor was air-cooled. The only real drawback of the air-cooled motor is the mechanical noise; it will never be as quiet as a liquid-cooled bike. After spending so much time on liquid-cooled machines, I find that the WR makes some odd noises, but mostly the bike does what it is supposed to. Using good fuel and lower overall gearing make it even better. I'm a little disappointed in the weight, but I like this bike and applaud its versatility.

—Karel Kramer

HL/WL: 6'1"/185 lb.
Motorcycle(s) currently raced/ridden:
Honda XR600RM, Kawasaki KX500-E3,
Yamaha YZ250E1
Riding ability: Enduro rider

bike's ability to hook up, brake and hill climb. Naturally, we ride in a lot of sand with occasional stones and hardpack thrown in, and the M58 works for us. When we changed the tire we found two rim locks in the rear wheel which made the tire change a hassle. We removed one lock and never suffered from tube spinnage. Bridgestone supplied the front tire, an ED-11, which we consider to be the best do-it-all rubber on the market.

STUCK IN THE MIDDLE

It may sound like we sniveled heavily about the WR500's inability to handle enduro obstacles and, admittedly,



Yamaha's add-on spark arrestor bolts on easily and doesn't stifle the power. Good handholds are built right into the rear fender.

After my first ride on the WR, I was humbled! The motor pinged and ran fat, and the response wasn't clean. We dropped the main jet down one and changed to a slide with more cut-away. That cleaned up the response, but the power delivery was still a little dead. I slipped on a SideWinder rear sprocket with one more tooth, and that made the bike a pleasure to ride. Two teeth more than stock may have been even better. After these mods I liked the machine. It's a little on the porky side, but you can ride it anywhere. It has the best suspension of any Yamaha yet. I prefer the old-style YZ490's tank and seating position. That bike had a slimmer feel that was awesome for a taller rider. These new ergos are better for the mainstream (shorter) rider.

The WR has good brakes, it's easy to start, the shifting is barely average, and the suspension rates well with me. All in all, it's a darn good wagon.

—Tom Webb

HL/WL: 62"/195 lb.

Motorcycle(s) currently raced/ridden:

Honda CR250/500RM, KTM 300 E/XC

Riding ability: A enduro rider



The new WR frame is similar to the 250's, yet is fit with all-new front suspension, a big tank, an 18-inch rear wheel and Bridgestone tires.

we did. The bottom line is that the bike is heavy, the gear spacing is bizarre and the low-end performance is marginal. Of course, there isn't another 500cc machine made that performs any better, since all of the current motocrossers are equipped with high-horsepower, quick-revving,

almost-bersek power characteristics when they're applied to this type of terrain. And if versatility is your goal, all of them are suspended too stiffly and overdamped. Compared to the competition the WR500 kicks butt, despite its weaknesses. While the bike is basically a closed-course



Topping the scales at 246 pounds without fuel, this machine is no flicker, though it does fly straight and true. The WR's ergos are sound (except for the tank), and all of the controls are smartly laid out.

TECHNICALLY SPEAKING—YAMAHA WR500ZB

Yamaha has a history of taking existing parts and, after a little switching and swapping, creating different motorcycles that fill other needs quite well. Such is the case with the WR500ZB, which is basically a conglomeration of the proven air-cooled YZ490 power plant and latest-generation YZ250 rolling chassis.

pression has been reduced slightly, with a reshaped combustion chamber that is rated at 6.7:1 instead of 6.9:1. This mod was also aimed at eliminating pinging.

Those changes, along with a lighting coil-equipped ignition and steel motor mount plates to quell vibration constitute the sole modifications to the 487cc mill. After experimenting with different gearboxes, Yamaha decided to leave the ratios and clutch unchanged, but they did bless it with an easier-pull, new-style clutch cable.

CHASSIS CHANGES

The WR's chrome-moly frame is a far cry from the YZ490's. It's quite updated and features a much stronger construction than the 490's, though it's not the same as the WR250ZB's. There's a little less rake (28.3 degrees compared to 28.5 on the 490; the WR250 measures 27.5 degrees) and more trail (5.0 inches versus 4.8 for both the old 490 and the new WR250), and there's more distance between axles (59.3 inches instead of 58.1; 58.9 for the WR250). In addition, the WR500 gets a removable subframe.

Another bit of modernization is the Deltabox swingarm, which is larger and stronger than the 490's while maintaining the same weight. That's matched with a contemporary L-shaped shock linkage for the Monocross system, which results in a more progressive leverage ratio. Yamaha insists that the low-hanging linkage arms aren't vulnerable to rocks or crusher landings.

A rear disc brake is a welcome improvement over the 490's drum. Like the current YZ binders, the WR rotor has fewer slots than previous YZs in order to reduce pad wear. The pads use a new material for a

MAKE/MODEL	Yamaha WR500ZB
PRICE	\$4299
WARRANTY	30-day limited
SERIAL NUMBER	JYA4AAW00NA000010
CUSTOMER SERVICE	Yamaha Motor Corp. P.O. Box 655 Cypress, CA 90630 714/761-7300

ENGINE ENHANCEMENTS

With roots traceable to the YZ360 or even the RT1-MX, the basic YZ490 engine has been around for over a decade. However, there are several items that differentiate the WR500's motor from the old YZ490's. In order to better meet off-road riding requirements, the WR's 38mm Mikuni is actually 2mm smaller than the carb on the YZ. The modification also provides better throttle response and low-end power. Com-

ENGINE TYPE	Air-cooled reed valve-inducted two-stroke single
DISPLACEMENT	487cc
BORE x STROKE	87.0 x 62.0mm
COMPRESSION RATIO	6.7:1
LUBRICATION	Premix (24:1 Yamaha R recommended)
AIR FILTRATION	Single-stage oiled foam element
TRANSMISSION	Five-speed
GEAR RATIOS (internal)	1st 1.933:1 2nd 1.500:1 3rd 1.222:1 4th 1.000:1 5th 0.833:1
SPROCKET SIZES	14/48



The rear brake is progressive and strong, yet not overly sensitive. The rear linkage hangs down low and can be a problem if you ride over big boulders or fallen trees.

machine (since it's not EPA legal), it's being touted as an Open-class bike with a flair for the woods and the desert. We give the WR's suspension great marks, and for the desert it gets excellent grades. For nasty

canyons, rocky streams, quick-hitting uphill and snotty off-cambers it passes—barely.

Balancing out these marks is the fact that the bike is an excellent motocross weapon. Dial in some

more progressive feel, and the rear caliper protector is 27mm farther forward than previous disc-equipped YZs to better protect the brake line. The WR500 and 250 employ a slightly smaller-diameter disc brake to keep them away from rocks and damage.

RAKE/TRAIL	26.3 deg./5.0 in.
TIRES	Front—90/100-21 Bridgestone ED-11 Rear—120/90-18 Bridgestone ED-12
BRAKES	Front—Twin-piston-caliper disc Rear—Single-piston-caliper disc
SOUND TEST	101 dbA
WEIGHT (wet, no fuel)	246 lb.
FUEL CAPACITY	3.3 gal.
RESERVE	Yes
SEAT HEIGHT	37.2 in.
GROUND CLEARANCE	13.3 in.

SUSPENSION UPGRADES

This is where the WR really shines compared to the YZ490. In front is a 43mm inverted KYB cartridge fork with 20-position compression and rebound damping adjustments that can be accessed from the top of the legs. There's also a screw-type preload adjuster.

Though it's externally identical to the forks on the latest YZs, the WR's KYB is fitted with different valving for plusher off-road action. The stock

springs are rated the same as the YZ250B1's 0.390 units. Claimed travel is one foot.

Like the WR250, the 500 receives a new KYB shock which has a 129mm (5.08-inch) stroke, 13mm longer than the YZ250WRA. Combined with the new Monocross linkage, that's good for 12.2 inches of claimed wheel travel, slightly less than the WR250.

The shock's washer valve stack employs a needle valve to adjust fluid flow through the center of the shock shaft. A 4.8 kg/mm spring is stock.

FRONT	
TYPE	43mm inverted KYB cartridge fork
TRAVEL (claimed)	12.0 in.
COMPRESSION DAMPING ADJ.	20-position
REBOUND DAMPING ADJ.	20-position
PRELOAD ADJUSTER	Screw-type
REAR	
TYPE	Monocross with KYB shock
TRAVEL (claimed)	12.2 in.
COMPRESSION DAMPING ADJ.	22-position
REBOUND DAMPING ADJ.	22-position
PRELOAD ADJUSTER	Threaded
RESERVOIR	Piggyback

BITS AND PIECES

Yamaha gave the WR500 the same type of bodywork as the smaller bikes, meaning it gets the extended



The clutch pull is too stiff, so we lubed the cable with Bel-Ray 6 in 1. This helped a little, but the pull was dramatically lightened by installing a Honda clutch perch and lever.

damping and go racing! It's also a superb weekend fun wagon: it starts easily, is good on fire roads, is supple on bumps and you can gear it to the moon for big speeds. It holds plenty of fuel and will last years. We may call it the "old air hammer," but a new chassis, legs and brakes give the WR500ZB something it never had before: style *and* function. **DR**

sidepanels to prevent wear on the turquoise seat. There are also the same cutouts so you can grab and lift the rear of the bike without cutting your hand on the edge of the rear fender.

A reshaped seat base is 15mm higher and improves airflow into the airbox. To prevent water and debris from getting to the filter, however, Yamaha semibaffled the air intake passage.



PHOTO: MIKE WEBB

Big landings with big guys aboard are absorbed well, although the suspension is a little too soft for a pro motocrosser. In the desert the WR's suspension is plush and resists bottoming. It could use a small skid plate for rock riding.